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ABSTRACT

A systems model of academic department performance is proposed and an empirical test of the model in a set of 20 departments is reported. A review of research into departmental functioning is also presented. Departmental input and process variables were examined in relation to eight departmental outcomes including: (1) student satisfaction with overall learning experience, (2) student satisfaction with faculty, (3) student satisfaction with academic advising, (4) student graduate school admissions ratio, (5) student employment in field ratio, (6) faculty satisfaction with departmental research quality, (7) faculty job satisfaction, and (8) degrees conferred per faculty member. Data were collected from each of 20 departments and the college records of a public urban college of arts and sciences. Student and faculty questionnaires were also used. No one input or process variable related consistently to a majority of the outcomes. The eight departmental outcomes were found to be largely independent of one another, and predicted by relatively unique patterns of departmental characteristics. Faculty workload, tenure pattern, and disciplinary differences were found important among the correlates of departmental outcomes. (Author/SF)

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THE STUDY OF
ACADEMIC DEPARTMENT PERFORMANCE

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ABSTRACT

The paper proposes a systems model of academic department performance, and reports an empirical test of the model in a set of 20 departments. Departmental input and process variables related to eight departmental outcomes were identified: (1) student satisfaction with their overall learning experience, (2) student satisfaction with faculty, (3) student satisfaction with academic advising, (4) student graduate school admissions ratio, (5) student employment in field ratio, (6) faculty satisfaction with departmental research quality, (7) faculty job satisfaction, and (8) degrees conferred per faculty member. The eight departmental outcomes were found to be largely independent of one another, and predicted by relatively unique patterns of departmental characteristics. Salient among the correlates of departmental outcomes were faculty workload, tenure pattern, and disciplinary differences.

INTRODUCTION

Anderson (1977) begins his recent paper, "In Defense of Departments," with the statement: "No administrative unit within the college or university has been so important, misunderstood, and maligned as the academic department." Without better empirical research into departmental functioning, it seems unlikely that this situation will improve in the near future.

Dressel et.al. (1970) conducted the first comprehensive data-based study of academic departments. They concluded their monograph with a plea for more systematic research:

> "The picture we have drawn of the department and its structure was based primarily upon the little empirical research available. In the literature, the extent of the discussion of this topic greatly exceeds the facts and generalizations based on systematically gathered evidence. Perhaps the day is near when academics will study themselves as expertly as they study industrial workers, teachers, and members of other occupations. Certainly, the problems which confront those interested in higher education can no longer be solved by speculation or reflection. Systematic evidence and careful analysis are required."

A review of empirical research into departmental functioning since Dressel's report is not encouraging. Although a considerable body of research on academic departments exists (Peterson, 1976), only a few studies have focussed upon differences in <u>outcomes</u> across departments; that is, in finding out why some departments perform better than others. Moreover, the lack of a common research paradigm precludes integration of the meager findings reported.

Different researchers have focused upon differing sets of dependent and independent variables, and no scholar has defined a comprehensive analytic model. For example, Hartnett and Centra (1977) studied the learning gains of students. Hartnett (1976) reported that learning gains of biology students correlated with four departmental variables: (1) the number of FTE faculty, (2) the percent of faculty with an earned doctorate, (3) the number of undergraduate courses offered in the major, and (4) the level of student expectations.

Allen (1972) reported a study which linked rated teaching effectiveness to heterogeneous faculty research interests and leadership style within the departments sampled. Student satisfaction has been measured by questionnaires and linked to faculty-student relations (Gregg, 1972), departmental orientation (Heiss, 1967), and learning climate (Bowen and Kilman, 1975). Earlier, another thread of research examined student values, partly in terms of differing departmental characteristics (Newcomb and Feldman, 1969; Vreeland and Bidwell, 1966).

Other empirical studies have linked departmental characteristics with scholarly productivity. Menzel (1962) showed that article and report production in hard-science departments is related to collegiality and informal information flow. Pelz and Andrews (1966) reported a similar association between informal relationships and scholarly "productivity" in the sciences. Roose and Anderson (1970) linked faculty pedigree with differential research productivity across departments. Pelton (1970) and Thorp (1970) related research output to organizational variables: decentralization of authority and departmental autonomy.

In their seminal work, Dressel et. al. (1970) found that faculty publication rates correlated with several variables: (1) departmental grant income, (2) percent nontenured faculty, (3) number of Ph.D.'s graduated, and (4) negatively with the number of undergraduate degrees granted. Biglan (1973) related journal article production in "hard" departments to "social connectedness." In Biglan's

research, social connectedness also correlated with three other types of departmental outcome, depending upon the type of department examined: (1) technical report production, (2) quality of dissertations, (3) quality of graduates' first jobs.

Given the enormous amount of empirical research lavished upon decision making processes in industrial settings (Pennings, 1976), it is surprising that so few data have been gathered to relate differing decision making processes and leadership styles to a full range of academic department outcomes. Dressel et. al. (1970) report that democratic operation, autonomy, and low concern for students predict Cartter Ratings, but most studies of decision making processes in academic settings are purely descriptive and prescriptive (e.g., McHenry, 1977).

In the references cited above, departmental outcomes have been defined variously: (1) student learning gains, (2) student satisfaction, (3) quality of student dissertations, (4) graduate school admissions ratios, (5) faculty research and publication output, (6) faculty satisfaction (7) Cartter ratings, etc. Researchers have linked these outcome variables with a wide range of "predictors:" (1) various measures of faculty "quality," (2) student quality, (3) faculty collegiality, (4) autonomy, (5) decision making processes, and (6) chairperson leadership.

There is no reason to assume a priori that these sets of dependent and independent variable are positively intracorrelated. Indeed, Smith and Fiedler (1971) found that even alternative measurements of scholarly "productivity"

failed to converge. Moreover, research in other types of organizations suggests that group outcome measures, i.e., typically, productivity, adaptability, employee job satisfaction, etc., are predicted by different combinations of factors in different kinds of groups (Bare, 1977). Thus, it remains a research issue whether academic departments can maximize faculty satisfaction, research productivity, undergraduate student learning, and financial performance -- and by what combination of staffing, decision making, teaching and leadership patterns such a result can be obtained.

The sine qua non for improved research into departmental performance is to measure complete sets of relevant outcomes and predictors within an integrative model. Unless all the variables of interest are measured, the researcher cannot be sure that one outcome is not achieved at the cost of an unmeasured other. Furthermore, unless all suspected predictors of the outcomes are measured, relationships discovered may simply be the effect of unmeasured variables. At the minimum, empirical studies of academic department functioning should measure the following classes of variables:

1. Student outcomes
    a. Learning gain scores on standardized tests
    b. Multiple measures of satisfaction (i.e., satisfaction with program content, learning process, faculty relationships, academic advising.)
    c. Graduate school admission ratios
    d. Employment ratios
    e. Program completion ratios
    f. Attainment of desired problem solving, interpersonal, aesthetic or vocational skills.

2. Faculty outcomes
   a. Publication productivity
   b. Multiple measures of faculty satisfaction (i.e., satisfaction with departmental research, job satisfaction, satisfaction with personal and professional development)
   c. Research proposals, technical reports, and patent applications per faculty member
   d. Indicators of university and community service
3. Administrative outcomes
   a. Budget variance
   b. Degrees produced, cost per degree, or other efficiency measures
   c. Ratio of new to total credit hours produced
   d. Student enrollment growth or decline
   e. Grievance rates
   f. Staff turnover ratios
4. Input variables
   a. Indicators of student quality (e.g., average scores on standardized tests)
   b. Indicators of faculty quality (e.g., Ph.D. ratios)
   c. Admissions/applications ratio
   d. Average faculty compensation
   e. Scholarship dollars per student
   f. Research income per faculty member
   g. Ratio of matriculated/non-matriculated students
   h. Indicators of departmental resource quality (laboratory, learning center, facility budget levels)
   i. Subject matter (Biglan's typology)

5. Group structure and process
   a. Departmental goal setting and planning
   b. Decision making and influence processes
   c. Personal and program evaluation methods
   d. Chairperson leadership behavior
   e. Faculty collegiality, interpersonal relationships, informal communication
   f. Faculty relationships with students
   g. Student role in goal setting, decision making, and evaluation
   h. Openness to change
   i. Workflow characteristics (i.e., mix of teaching modes, assistant/faculty ratio, faculty/staff ratio, upper/lower division course ratio, etc.)
   j. Workload (e.g., student/faculty ratios, credit hour/faculty ratio, other workload surrogates)
   k. Tenure, rank, promotion patterns
   l. Perceived reward structure
6. Environmental constraints and supports
   a. Departmental autonomy within division or college
   b. Relationships with external program planning, evaluation, and control units
   c. Nature of market for departmental "product"
   d. Relationships with external funding sources
   e. Course load induced in serving other departments
   f. Differential participation in external faculty, instructional, and management development activities
   g. Results of accreditation or external program evaluations
   h. Policy constraints affecting departments differentially

The "outcomes" listed above are variables having some currency in theory or practice. Ultimately, research into departmental performance should measure outcomes in terms of the degree to which each department accomplishes a specific set of goals. Much work has been done on the problem of profiling goals and assessing their accomplishment at the institutional level (R.E. Peterson, 1971). Unfortunately, instruments do not exist at present for profiling departmental goals and their attainment.

The fragmented character of empirical research on academic department performance stems partly from the lack of an integrating analytic model or theory. The type of variables listed above assume a systems model of departmental functioning. Assumption of a systems model both simplifies and complicates the analysis of departments. It simplifies the process because it suggests that academic departments may function via processes much like those found in other formal groups. Thus, the growing literature and methodology of organization theory can be bought to bear upon the study of academic units, guiding our search for important variables and hypotheses. Unfortunately, this same body of knowledge suggests that we may find departments to be much more complex that we presently assume.

Several studies of academic departments from the systems perspective were cited by Peterson in his (1976) review of the literature on academic departments. As a group, the studies noted by Peterson suffer from inconsistency in variable definition--defining chairperson behavior, departmental characteristics, satisfaction, etc., alternatively as input, output, environment, and system depending upon the researcher's whim. Interestingly, none of the studies cited by Peterson as based in systems theory examined student outcomes in any form. Clearly, systems theory has been loosely applied by scholars of academic departments to date.

Biglan (1973) has articulated the only real theory of academic department performance advanced to date. Put simply, Biglan argues tha t practicioners of each academic discipline employ a unique "paradigm" (Kuhn, 1962) in the pursuit of their work, and that the imprint of this mode of thinking and doing influences both the task and socioemotional processes found within a given type of department. Biglan's research has produced a typology which classifies subject matters across three dimensions: (1) hard versus soft, (2) pure versus applied, (3) life versus non-life. Biglan demonstrated that social "connectedness" (e.g., collegiality) varies systematically across departments classified according to this typology. Moreover, he finds scholarly productivity related to social connectedness in some types of departments and not in others. Others (Smart and Elton, 1976) report that departmental goals and leadership behavior also vary in ways consistent with Biglan's model.

Despite the insights provided by Biglan's work, his theory is limited to explaining those differences in departmental functioning and performance traceable to differences in "the paradigm." As noted above, observers of academic departments have suggested a host of additional variables hypothesized to influence departmental functioning. These observations need to be investigated too. It may well be that some of the differences in decision making, faculty-student interaction patterns, workload, etc., observed across departments are simply manifestations of underlying paradigmatic differences across disciplines. Conversely, perhaps such variables vary independently of paradigm. The relative importance of paradigm versus other variables can be tested empirically. Such a test is reported in this paper, which represents a partial confirmation and extension of Biglan's model.

METHODOLOGY

GOALS OF THE RESEARCH

The study reported herein had three goals:

1. To test a partial systems model of academic department performance, that is, a model which includes a grounded set of input, process, and outcome variables.
2. To test Biglan's typology within that larger model
3. To provide an example to colleges or universities of how to study the performance of their departments empirically. Hopefully, such studies could provide a factual basis for improved decision making and organizational development.

POPULATION

The research was conducted in a public urban college of arts and sciences. The college enrolls 4,000 students, and employs 200 full-time faculty. The college has 20 academic departments, six of which offer graduate study.

The unit of analysis is the group. The findings describe how departmental input and process vary across one collegiate universe of departments. Thus, the characteristics of the institution are of interest only to the extent that departmental input/process-outcome relationships might be moderated by institutional type.

DATA SOURCES

To test the systems model of academic department functioning, data were gathered from each of the 20 departments, and from college records. It is important to note that the research employs three independent data sources: the faculty, graduating students, and college records. This strategy mitigates the bias that may occur when a single source, such as faculty or students, assesses both departmental outcomes and related departmental processes.

Student perceptions were gathered by means of a questionnaire completed by graduating seniors at the college. 450 seniors completed the questionnaire, a response rate of 75%.

Faculty perceptions were gathered by means of a questionnaire* completed by the faculty and chairpersons. 88 faculty and 16 chairpersons completed these questionnaires, a response rate of 51%.

"Hard" data on the departments were gathered from the college business office.

The department is the unit of analysis. The faculty questionnaire asks the members of each department to respond to questions which describe departmental processes, chairperson behavior, or relationships with students in that department. In effect, the faculty in each department function as participant observers, evaluating their department in terms of questionnaire dimensions called "factors." The factors are sets of interrelated questions which describe discrete aspects of departmental functioning. The scores provided by the faculty-observers on each descriptive dimension were averaged across the number of faculty responding from each department to produce a score on each factor for each department. The research analyses were performed by relating the departmental scores, averaged student satisfaction scores, and hard data across the 20 departments in the college.

VARIABLES MEASURED

Because the exploratory study employed data being gathered for other purposes, it is not possible to tap all the departmental characteristics listed previously, or even those felt to be the most important to departmental functioning. Nonetheless, the variables measured are largely grounded in prior research, and sufficiently comprehensive to demonstrate the methodology.

The following variables were measured for each of the 20 departments:

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Outcomes

1. Senior student satisfaction with their overall educational experience
2. Senior student satisfaction with the faculty
3. Senior student satisfaction with academic advising
4. Ratio of graduates accepted into graduate school/number applying
5. Ratio of graduates finding employment in their field/number seeking employment
6. Faculty satisfaction with the quality of departmental research output
7. Ratio of degrees granted/number of full-time faculty in the department
8. Faculty job satisfaction

Inputs

1. Number of faculty
2. Number of students
3. Student/faculty ratio
4. Ratio of number of full-time faculty holding Ph.D./number of full-time faculty
5. Dummy variable (Nie, et.al, 1975) computed to classify department as life versus non-life
6. Dummy variable computed to classify department as hard versus soft
7. Dummy variable computed to classify department as pure versus applied
8. Dummy variable computed to indicate presence of a graduate program in the department.

Departmental Structure and Process

1. Faculty perceptions of chairperson effectiveness
2. Faculty perceptions of extent of collaborative faculty-chairperson problem solving
3. Faculty perceptions of supportive relationships between faculty and students

4. Faculty perceptions of the extent of collaborative faculty-student decision making
5. Faculty perceptions of the level of collegiality in the department
6. Faculty perceptions of the extent of goal setting and evaluation process in the department
7. Faculty perceptions of the level of personal performance evaluation in the department
8. Ratio of tenured/total full-time faculty
9. Ratio of credit hours/total full-time faculty

DATA ANALYSIS

FACTOR ANALYSIS

To verify that the faculty survey questions clustered into homogeneous scales or sets as expected, the faculty questionnaire was factor analyzed. Each panel of questions (i.e., those relating to students, the chairperson, and departmental process) was subjected to a separate analysis. In each case, the Type PA2 factoring procedure of the SPSS FACTOR computer program was employed with VARIMAX rotation (Nie, et.al., 1975).

The results of the factor analysis are presented in the appendix. The appendix lists the individual questions which comprise each factor.

SCORE COMPUTATION

Each question is scored on an eight point scale. For example, to the question, "How competent is the head of your department as an educator?" the faculty member chooses from the following set of alternatives: "1. . .2, Not competent; 3. . .4, Somewhat competent; 5. . .6, Quite competent; 7. . .8, Very competent."

To quantify each factor, each faculty member's responses to the questions which comprise that factor were summed, producing a set of total scale scores--one for each factor. Subsequently, departmental scores were produced by averaging total scale scores across the number of faculty members who observed the department.

RELIABILITY ANALYSIS

An analysis was performed to determine the measurement reliability of each scale. This analysis employed the RELIABILITY procedure of the SPSS computer program. This procedure calculates Alpha coefficients for each scale. Chronbach's Alpha coefficient indicates the homogeneity of the items in the scale. The resulting Alpha values are satisfactory, and are indicated in the appendix.

REGRESSION ANALYSES

Eight regression analyses were performed to relate the input and process variables to the eight system output measures across the 20 departments. These analyses were performed using the SPSS REGRESSION procedure. Variables were entered into the regression equation in unconstrained, stepwise fashion. No variables were allowed to enter the equation unless an F-test of the regression coefficient proved significant at the 95% confidence level (F=2.12). For reasons discussed below, no general inferences can be drawn from the results. Nonetheless, the analyses identify key variables related to departmental performance at this college and provide an interesting case study for others.

The stepwise regression procedure is a powerful analytic tool. The first variable to enter the equation is the strongest correlate of the dependent variable, that is, the strongest "predictor*" of the departmental outcome of interest. The second variable to enter the equation is that which explains the largest portion of the remaining dependent variable variance, and so on. Independent variables continue to enter the regression equation until the maximum amount of variance in the dependent variable is "explained."

Another way to express the meaning of the regression procedure is to say that the second variable to enter the equation has the highest partial correlation with the dependent variable, controlling for the effects of the first. Similarly, the third variable to enter the equation is the best predictor of the dependent variable after the effects of both the first and second independent variables are controlled, and so on. In effect, the regression list identifies all the variables which explain independent amounts of outcome variance, that is, variance in addition to that explained by all preceeding variables in the equation.

* Although the independent variables may be called "predictors" of the outcome variables, causality is not implied. The term arises from the fact that the value of the outcome variable can be predicted from the values of the independent variables.

The stepwise technique allows one to reduce a large number of independent variables to a smaller set with minimum loss of predictive power. However, this benefit entails a cost. One cannot generalize from the resulting equations because the selection of variables is based upon small differences in partial correlations. These differences depend upon sample characteristics. Thus, different colleges might produce quite different equations because of relatively small differences in departments.

FINDINGS

The paragraphs below summarize the results of the eight regression analyses (Tables 1 - 8). Because of the limited sample, no generalizations are drawn. However, a review of the findings is presented under "Discussion," below.

CORRELATES OF DEPARTMENTAL OUTCOMES

Student satisfaction with General Educational Experience

Four variables account for 97% of the variance in student satisfaction with their educational experience in general (Table 1). Faculty workload is the strongest single correlate of student satisfaction. The most satisfied students are found in those departments providing the fewest credit hours per faculty member (r=-.47).

Not all scholars agree that the ratio of credit hours per faculty member is a reasonable surrogate for faculty workload. This ratio could be influenced by departmental popularity, instructional mode, and other factors. However, in the present case, credit hours/faculty cannot be inflated by program popularity, since student dissatisfaction is highest in departments having the highest ratios. Since the college employs the ratio as a workload indicator, their interpretation is employed here.

Table 1 about here

After workload, relationships between faculty and students accounts for a major portion of the students' satisfaction: the less supportive the relationship, the more satisfied the students (partial r = -.47).

Given the effects of faculty workload and faculty-student relationships, student satisfaction correlates positively with student/faculty ratio (partial r = .64). Student satisfaction is higher in departments with more students per faculty member.

Finally, the regression list indicates that with the effect of all the above variables controlled, the most satisfied students are found in applied as opposed to pure departments (partial r = -.96).

Student Satisfaction with Faculty

As shown in Table 2, four variables control 70% of the variance in student satisfaction with faculty across the departments. Again, the strongest correlate (r = -.56) of student satisfaction is the average number of credit hours carried by the faculty. After faculty workload, student satisfaction with faculty relates to an absence of collaborative faculty-student decision making and an absence of collaborative faculty-chairperson problem solving. With the effects of the other variables controlled, the most satisfied students are found in non-life departments.

Table 2 about here

Student Satisfaction with Academic Advising

One variable enters this regression, controlling 28% of the variance in student satisfaction with academic advising (Table 3). Again, faculty workload is the key correlate (r = -.53) of student satisfaction.

Table 3 about here

Student Graduate School Admission Ratios

Four variables (Table 4) control 96% of the variance in graduate school admissions. The ratio of tenured to total faculty is the strongest single correlate ($r = .64$).

Table 4 about here

Unlike the student ratings, collaborative faculty-chairperson problem solving relates positively to acceptance ratios, and individual performance evaluation and feedback relates negatively.

Given these effects, graduate school admissions are higher in hard as opposed to soft departments.

Student Employment Ratios

One variable (Table 5) controls all the variance explained (28%). The highest employment ratios are found in applied disciplines ($r = -.52$).

Table 5 about here

Faculty Satisfaction with Quality of Departmental Research

Five variables control 97% of the variation in faculty ratings of departmental research quality (Table 6). The strongest correlate of research quality is perceived chairperson effectiveness ($r = .74$).

Table 6 about here

Interestingly, research quality ratings vary inversely with the department's Ph.D. ratio: the smaller the relative number of Ph.D.s, the higher the ratings.

Research quality is rated higher in life than in non-life disciplines, and thereafter higher in departments having predominantly tenured faculties, and those having high levels of collaborative faculty-student decision making.

Degrees Produced per Faculty Member

Four variables control 82% of the variance in this surrogate for faculty productivity (Table 7). The highest ratio of degree production is found in life as opposed to non-life disciplines ($r = .61$).

Table 7 about here

This disciplinary difference aside, "productive" departments are characterized by collaborative faculty-chairperson problem solving. Degree production also relates to lack of supportive faculty-student relationships and lack of collaborative faculty-student decision making.

Faculty Job Satisfaction

Three variables enter the regression, controlling 71% of the variance in faculty job satisfaction (Table 8). The highest faculty job satisfaction is found in departments having satisfactory methods of individual performance evaluation ($r = .74$). Thereafter, job satisfaction is higher in departments having higher ratios of tenured faculty and those characterized by collaborative faculty-student decision making.

Table 8 about here

Summary of Regression Analyses

Only one variable emerges from the regression analyses as the key correlate of more than a single departmental outcome measure: credit hours per faculty member is the strongest correlate of all three student satisfaction measures. Moreover, it is the only variable which correlates with all three student ratings. High credit hour/faculty ratios are associated with student dissatisfaction about their education in general, dissatisfaction with the faculty, and dissatisfaction with academic advising.

Although six other variables make a unique contribution to the variance in student satisfaction, none appear in more than one regression list. The predominant pattern presented by the regressions is that of unique correlates for each of the eight departmental outcome measures. This impression is quantified by Table 9, which summarizes the relationships between the dependent and independent variables discovered by the study.

Table 9 about here

As shown by Table 9, only one independent variable besides credit hours per faculty member relates to three departmental outcome variables with a consistent sign. That variable is the ratio of tenured to non-tenured faculty members in the department. Tenure ratio is related to student satisfaction with academic advising, student graduate school acceptance ratio, and faculty satisfaction with departmental research quality.

Three other variables in Table 9 relate to three or more departmental outcomes, but predict them differentially; that is, correlate positively with some and

negatively with others. Overall, four of the eight predictors associated with more than one departmental outcome correlate with the outcomes differentially.

One of these differential predictors is collaborative faculty-student decision making. Collaborative faculty-student decision making is associated positively with faculty job and research satisfaction. However, the same variable is negatively related to student satisfaction with faculty and degrees produced per faculty member.

One of the three dummy variables computed to operationalize Biglan's model appears in six of the eight regression equations. Clearly, disciplinary differences do relate to the variance in outcomes across the departments in this college. In fact, two of the seven outcomes measured in the study are related primarily to disciplinary differences. Student employment ratios are higher in applied than in pure departments and degrees granted per faculty member is higher in life than in non-life departments.

DISCUSSION

VALIDATION OF SYSTEMS MODEL OF DEPARTMENTAL PERFORMANCE

The findings partially validate the proposed systems model of academic department functioning using data gathered in a typical college of arts and sciences. With the exception of student evaluations, the eight departmental outcome measures were found to be largely independent of one another (Table 10). Thus, relatively unique patterns of individual, group and leader characteristics explain the variance in outcomes across the 20 departments.

Table 10 about here

These findings illustrate two emerging themes in the literature on organizational effectiveness: (1) that the outcomes valued by various constituencies often are unrelated or conflicting (Campbell, 1977), and that studies of organizational performance either must include dependent variables appropriate to each (in this case, students, faculty, and management), or must somehow determine the preference ordering of the "dominant coalition" within the organization (Pennings and Goodman, 1977); and (2) that theory must be framed in terms of independent variables hypothesized to be closely and causally linked to specific outcomes (Perrow, 1977). For example, if the outcome of interest is the total number of research proposals produced, one would expect the granting of reduced teaching loads for proposal writing to have a greater impact than departmental "collegiality."

IMPORTANCE OF WORKLOAD

One of the salient findings of the present study was the strong negative relationship discovered between faculty workload and multiple reports of student satisfaction with their educational experiences. In this study, the number of credit hours taught per faculty member emerges as a pervasive correlate of outcomes. Although we cannot argue from this cross-sectional data that heavy faculty workloads cause student dissatisfaction, it is harder to argue the alternative hypothesis: namely, that student dissatisfaction within departments induces heavier teaching loads.

IMPORTANCE OF DISCIPLINARY DIFFERENCES

The results of this study help validate Biglan's model. As noted previously, disciplinary differences were related to six of the eight departmental outcome measures in some way, contributing some independent explanation of outcome variance beyond that associated with other variables. However, disciplinary differences were the best predictor of only two of the outcomes. It seems fair to conclude that differences in departmental outcomes also are related to individual, organizational, and environmental factors that vary independently of paradigm.

INSIGHT INTO THE BASES OF STUDENT SATISFACTION

Some faculty members argue that improvement in teaching/learning outcomes depends heavily upon improving the quality of interpersonal relationships between faculty and students. The author has been known to defend this assertion with some fervor. Unfortunately, the research data lend him little support.

In this study, the highest levels of student satisfaction with their education in general are found in departments in which the faculty perceive themselves as maintaining non-supportive relationships with students. Moreover, collaborative faculty-student decision making relates negatively to student satisfaction with faculty: the most dissatisfied students are found in departments reporting the highest levels of student involvement in decisions.

It appears that students at this institution respond to departmental faculties who play the role of authority figure in programs characterized by fixed requirements. One could hypothesize that these students respond more to professional expertise than to friendliness, and that they find the uncertainties and responsibilities of shared decision making more aversive than the certainty of clear requirements.

The fact that the students also report relative dissatisfaction with departments in which collaborative faculty-chairperson problem solving is practiced tends to confirm the students' lack of responsiveness to democratic decisionmaking processes. Of course, it is possible that participative decision making occurs in response to student dissatisfaction: as faculties try to ameliorate student discontent by involving students in departmental decisions which affect them.

NEED FOR BETTER LEADERSHIP STUDIES

Unfortunately, the faculty questionnaire tapped only a single dimension of chairperson behavior, providing a global evaluation of overall competence. This rating of leadership related to only one of the eight departmental outcomes: research quality. Future studies of departmental performance should measure chairperson performance in terms of the many dimensions of the role. For example, the leadership survey validated by Bare (1978) measures the leader's performance of eight group functions: (1) counseling and team building, (2) coordination and control, (3) staffing, (4) formalizing, (5) training, (6) external representation, (7) communication and feedback, and (8) performance-reward management. One might hypothesize that staffing, external representation, and performance-reward management are especially important functions of academic department chairpersons.

USEFULNESS OF THE RESEARCH

The study employed a set of outcome measures representative of faculty, student, and managerial perspectives, and commonly used to assess departmental performance. No one input or process variable related consistently to a majority of the outcomes. The systems model, the multiple data sources, and the multivariate analysis have produced an empirical snapshot of a set of twenty academic departments which highlights their complexity as organizational subsystems.

A unified theory of academic department performance awaits more and better empirical studies conducted in larger populations. Other variables must be identified and included in the system model. Better measurement must be achieved. It is especially important to get multiple measurements of key variables so as to assess the convergent validity of the research data (Campbell and Fiske, 1959), and to develop a method for profiling departmental goal attainment as a dependent variable.

But the very complexity of the present results refutes a host of simplistic alternative models of academic department functioning. If nothing else, these findings should sound the knell of the classic two-variable study of departmental performance. In these studies, the researcher examines a single outcome, say, research productivity, in terms of a single predictor, say, collegiality, autonomy, faculty doctorate ratio, etc. If an empirical link is discovered between the two variables, the researcher usually prescribes manipulation of this variable as a means to improve departmental performance. Confusion between correlation and causation aside, the profileration of such studies has added little to our knowledge of departmental functioning.

SURVEY-GUIDED ORGANIZATION DEVELOPMENT

Fortunately, improving departmental performance does not depend upon better theory. Data of the type gathered in this study can be used by individual departments to plan self-directed performance improvement activities. Typically, the data are returned to the faculty during organization development workshops. During these workshops, each department analyzes the faculty and student survey results, discusses opportunities and problems, and produces plans for constructive change. In a sense, the survey and outcome data stimulate the faculties to develop their own "theories" of departmental performance, and to plan improvements accordingly.

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Table 1

Regression Of Departmental Variables On Student Satisfaction With General Educational Experience

Variables	Multiple R	R Square	R^2 Change	Simple r	Partial r
Credit Hours Per Faculty Member	.47	.22	.22	-.47	
Supportive Relationships Between Faculty and Students	.63	.40	.17	-.44	-.47
Students Per Faculty Member	.80	.64	.24	-.15	.64
Dept. Pure Versus Applied Discipline	.98	.97	.32	.01	-.96

Table 2

Regression Of Departmental Variables On Student Satisfaction With Faculty

Variables	Multiple R	R Square	R^2 Change	Simple r	Partial r
Credit Hours Per Faculty Member	.56	.31	.31	-.56	
Collaborative Faculty-Student Decision Making	.68	.47	.15	-.06	-.48
Dept. Life Versus Nonlife Discipline	.81	.65	.18	-.34	-.59
Collaborative Faculty-Chairperson Problem Solving	.83	.70	.04	.11	-.37

Table 3

Regression Of Departmental Variables On Student Satisfaction With Academic Advising

Variables	Multiple R	R Square	R^2 Change	Simple r	Partial r
Credit Hours Per Faculty Member	.53	.28	.28	-.53	

Table 4

Regression Of Departmental Variables On Student Graduate School Admissions Ratio

Variables	Multiple R	R Square	R^2 Change	Simple r	Partial r
Ratio Of Tenured To Total Faculty	.64	.41	.41	.64	
Collaborative Faculty-Chairperson Problem Solving	.73	.53	.12	.64	.45
Individual Performance Evaluation And Feedback	.84	.71	.18	.05	-.62
Dept. Hard Versus Soft Discipline	.98	.96	.24	.32	.93

Table 5

Regression Of Departmental Variables On Student Employment In Field Ratio

Variables	Multiple R	R Square	R^2 Change	Simple r	Partial r
Dept. Pure Versus Applied Discipline	.52	.28	.28	-.52	

Table 6

Regression Of Departmental Variables On Faculty Satisfaction

With Departmental Research Quality

Variables	Multiple R	R Square	R^2 Change	Simple r	Partial r
Chairperson Effectiveness	.74	.54	.54	.74	
Ratio Of Ph.D.s To Total Faculty	.81	.66	.11	-.18	-.50
Dept. Life Versus Nonlife Discipline	.87	.76	.09	-.38	.53
Ratio Of Tenured To Total Faculty	.96	.92	.16	.14	.83
Collaborative Faculty-Student Decision Making	.98	.97	.04	.10	.79

Table 7

Regression Of Department Variables On Degrees Produced per Faculty Member

Variables	Multiple R	R Square	R^2 Change	Simple r	Partial r
Dept. Life Versus Nonlife Discipline	.61	.38	.38	.61	
Collaborative Faculty-Chairperson Problem Solving	.73	.53	.15	-.23	.49
Supportive Relationships Between Faculty and Students	.87	.77	.23	-.28	-.55
Collaborative Faculty-Student Decision Making	.91	.82	.05	-.50	-.42

Table 8

Regression Of Departmental Variables On Faculty Job Satisfaction

Variables	Multiple R	R Square	R^2 Change	Simple r	Partial r
Individual Performance Evaluation and Feedback	.74	.55	.55	.74	
Ratio of Tenured to Total Faculty	.80	.64	.09	.36	.46
Collaborative Faculty-Student Decision Making	.84	.71	.06	.31	.43

Table 9

Correlates of Departmental Outcomes

	Student Satisfaction with General Educational Experience	Student Satisfaction with Faculty	Student Satisfaction with Academic Advising	Student Graduate School Admission Ratio	Student Employment in Field Ratio	Faculty Satisfaction with Department Research	Degrees Produced per Faculty Member	Faculty Job Satisfaction
Credit Hours Per Faculty Member	-	-	-					
Supportive Relationships Between Faculty and Students	-						-	
Students per Faculty Member	+							
Department Pure versus Applied Discipline	-				-			
Collaborative Faculty-Student Decision Making		-				+	-	+
Department Life versus Non-life Discipline		-				+	+	
Collaborative Faculty-Chairperson Problem Solving		-		+			+	
Ratio of Tenured to Total Faculty				+		+		+
Individual Performance Evaluation and Feedback				-				+
Chairperson Effectiveness						+		
Department Hard versus Soft Discipline				+				
Ratio of Ph.D.s to Total Faculty						-		

Table 10

Outcome Intercorrelations

	Student Satisfaction with General Educational Experience	Student Satisfaction with Faculty	Student Satisfaction with Academic Advising	Student Graduate School Acceptance Ratio	Student Employment in Field Ratio	Faculty Satisfaction with Departmental Research Quality
Student Satisfaction with General Educational Experience						
Student Satisfaction with Faculty	.40*					
Student Satisfaction with Academic Advising	.73**	.44*				
Student Graduate School Acceptance Ratio	-.27	.17	-.02			
Student Employment in Field Ratio	.38	.06	.00	-.40*		
Faculty Satisfaction with Departmental Research Quality	.36	-.06	.49*	-.01	-.12	
Degrees Granted per Faculty Member	-.20	-.26	-.14	-.05	-.09	-.17
Faculty Job Satisfaction	-.12	.02	.14	.29	-.39*	.36

* p=.05

** p=.01

FOOTNOTE

The author is indebted to Herbert R. Kells and Patricia Wilder for their comments and assistance.

Appendix A

Factors in the Faculty Questionnaire

CHAIRPERSON PANEL

		Factor Loading
I.	CHAIRPERSON EFFECTIVENESS (Alpha = .96)	
	How competent is the head of your department as an educator? (Not competent to very competent)	.88
	How much confidence and trust do you have in your department head? (Very little to a very great deal)	.87
	How competent is the head of your department as an administrator? (Not competent to very competent)	.85
	How often do you see the behavior of your department head as friendly and supportive? (rarely to very often)	.82
	How much confidence and trust does your department head have in you? (Very little to a very great deal)	.72
	How competent is the head of your department in his/her field of specialization? (Not competent to very competent)	.71
	How well does your department head know the problems you face in your work? (Not well to very well)	.65
	How do you view communications from your department head? (With great suspicion to almost always viewed with trust)	.63
	How often do you seek and use the ideas of your department head? (Rarely to very often)	.62
	How free do you feel to talk to your department head about problems related to your work? (Not free to very free)	.60

II. COLLABORATIVE FACULTY-CHAIRPERSON PROBLEM SOLVING (Alpha=.78)

How often does your department head seek and use your ideas? (Rarely to very often)	.73
How well do you know the problems faced by your department head in his/her work? (Not well to very well)	.63
To what extent is communication open and candid between you and your department head? (Very little to very great)	.62

DEPARTMENT PANEL

I. COLLEGIALITY (Alpha = .90)

How much interaction is there among members of your department? (Very little to a very great deal)	.77
To what extent is communication open and candid among members of your department? (Very little to very great)	.69
How free do you feel to talk to members of your department about problems related to your work? (Not free to very free)	.67
How often do you see the behavior of members of your department as friendly and supportive? (Rarely to very often)	.66
How well do members of your department know the problems you face in your work? (Not well to very well)	.64
How much confidence and trust do you have in members of your department? (Very little to a very great deal)	.60
How satisfied are you with your relationship with those you work with? (Not satisfied to very satisfied)	.59
How free do you feel to talk to members of your department about problems related to their work? (Not free to very free)	.52
How often do members of your department seek and use your ideas? (Rarely to very often)	.51

II. FACULTY JOB SATISFACTION (Alpha = .86)

How satisfied are you with your opportunities for career advancement at this institution? (Not satisfied to very satisfied)	.80
How satisfied are you with your opportunities for personal growth at this institution?	.77
How satisfied are you with your salary?	.76
How satisfied are you with your position?	.69
How satisfied are you with your employee benefits?	.60

III. DEPARTMENTAL GOAL-SETTING AND EVALUATION (Alpha = .89)

To what extent does your department evaluate its cirricula? (Very little to very great)	.77
How clear and specific are cirriculum objectives in your unit? (Not clear to very clear)	.74
How clear and specific are the goals and objectives of your unit? (Not clear to very clear)	.73
To what extent does your unit evaluate its own performance in relation to its goals and objectives? (Very little to very great)	.69

IV. PERSONAL PERFORMANCE EVALUATION (Alpha = .90)

How satisfied are you with the way you receive feedback on your performance? (Not satisfied to very satisfied)	.81
How often do you receive feedback on your performance? (Rarely to very often)	.73

V. SATISFACTION WITH DEPARTMENTAL RESEARCH (Alpha = .92)

How satisfied are you with the quality of sponsored research by faculty in the unit in which you work? (Not satisfied to very satisfied)	.72
How satisfied are you with the quality of non-sponsored research by faculty in the unit in which you work? (Not satisfied to very satisfied)	.64

STUDENT PANEL

I. SUPPORTIVE RELATIONSHIPS BETWEEN FACULTY AND STUDENTS (Alpha=.87)

How often is your behavior seen as friendly and supportive by students? (Rarely to very often)	.82
How much confidence and trust do students have in you? (Very little to a very great deal)	.79
How free do students feel to talk to you about problems related to their work? (Not free to very free)	.71
How much confidence and trust do you have in students? (Very little to a very great deal)	.61
How often do you see the behavior of students as friendly and supportive? (Rarely to very often)	.56
How much do students feel you are trying to help them with problems related to their work? (Very little to a very great deal)	.57
How well do you know the problems faced by students in their work? (Not well to very well)	.52

II. COLLABORATIVE FACULTY-STUDENT DECISION MAKING (Alpha=.64)

To what extent do you involve students in decisions related to their work? (Very little to very great)	.67
How often do you seek and use the ideas of students? (Rarely to very often)	.58
To what extent do you try to motivate students by encouraging them to cooperate with one another? (Very little to very great)	.56

Appendix B

Outcome Measures from the Senior Student Survey

1. Evaluate your general educational experiences:

   Excellent=4, Good=3, Fair=2, Poor=1

2. Evaluate the faculty:

   Excellent=4, Good=3, Fair=2, Poor=1

3. Evaluate the quality of academic advising:

   Excellent=4, Good=3, Fair=2, Poor=1

4. Did you apply to graduate school?

   Yes=1, No=0

   If so, were you accepted?

   Yes=1, No=0

5. Have you sought employment?

   Yes=1, No=0

   Have you obtained employment?

   Yes=1, No=0